



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Fürth's very extensive compilation will therefore be a welcome guide in this growing field of research. Although von Fürth's volume marks a new departure, the book is arranged on extremely conservative lines. After a brief introduction, it deals with the chemistry of the blood, respiration, digestion, excretion, animal poisons, secretion, etc., a series of heading that suggest at once the sections of the old-fashioned human physiology. It seems really remarkable that such a classification as this should have been adopted, for if there is one lesson taught by comparative physiology more clearly than any other, it is the non-essential character of the blood. Large groups of the lower metazoa are complete organisms and yet they are without this fluid. Why then should the blood be chosen as a means of introducing the student to the chemical physiology of these lower forms? But aside from this traditional treatment of the sections, the substance of these sections is refreshingly modern, and with their excellent bibliographies they form admirable summaries of many new fields of work. The exhaustiveness of the treatment is well indicated by the subject digestion which covers over a hundred pages and takes up in sequence digestion in the protozoa, sponges, cnidaria, echinoderms, worms, molluscs, crustaceans, and other arthropods, devoting a chapter to each. Such a work as this, despite its defects, must find its way to the hands of every advanced student of animal physiology.

Mind in Nature.¹—This little book is at bottom an argument for a certain form of vitalism. The author, while admitting the value of the chemico-physical descriptions of movements given by Loeb and other investigators of similar interests and aims, insists that it is impossible to account for those forms of movement which we usually designate as action or conduct on this ground. He believes that there is a gap in the physical series which must be bridged by some such factor as the psychic if a complete description of action (*Handlung*) is to be given.

The work consists of a careful study of the forms of movement. Reflexes are classified as :

I. Simple.

II. Complex { 1. Synchronous { a. Homometachronous.
 2. Metachronous { b. Heterometachronous.

¹ Driesch, Hans. *Die "Seele" als elementarer Naturfaktor. Studien über die Bewegungen der Organismen.* Leipzig, Englemann, 1903. 8vo, vi-97 pp.

The synchronous reflexes are such complex movements of multiple phases as exhibit a rhythm; the metachronous are chain reflexes in which each step serves as a stimulus for the next, of these the homometachronous are coördinated, the heterometachronous uncoördinated.

In his discussion of instinct the author states that only simple stimuli can initiate instinctive movements. By a simple stimulus he means something which is essentially an elementary nature quality; such, for example, are light, motion, heat. The simple stimulus he contrasts with the individualized stimulus, which is appropriate for a certain specialized type of sense organ. In this discussion much credit is given to Loeb for his analyses of instincts.

Attempts are made to get at the meaning of the concepts of neural centres, spontaneity, autonomy, etc. Driesch thinks that the present tendency to do away with the concept of brain centre is as far from being desirable as is the uncritical acceptance of the old notion of such centres.

The chapters on directed movements (taxes), reflexes, instincts, and brain centres serve merely as an introduction to the author's real subject, Activity (*Handlung*). The analysis of reflexes does not furnish the information necessary for the understanding of action, for in the latter there are characteristics which are not found in the simpler forms of movement. The criteria of action which Driesch presents are the "Individuality of Association" and the "Historical Basis of Reaction." Volitional action differs from directed or reflex movement in that it is infinitely variable; it is not a matter of certain elements of stimulus and response in definite and unchanging relation, but of practical unpredictability. Loeb makes the great mistake of supposing that all movements of the organism can be described in terms of the factors which are common to reflexes. Now, in the opinion of Driesch this is impossible, since in action there is "autonomy"; we therefore have to take into account the associational facts, and in as much as the subjective as such cannot be material for the biologist it is necessary to objectify this factor. For Driesch the objective element which enables one to give a description of action is the "psychoid."

The book well deserves the attention of biologists who are interested in the relations of their science to chemistry, physics, and psychology. The chances are that few will be able to agree with the work as a whole, but this makes it all the more valuable. It is of interest to note that we have here another biological discussion which is

avowedly unmetaphysical. The felt-need to say in the preface that a scientific book is unmetaphysical is good evidence of the increasing interest in philosophic problems among biologists. Furthermore, the author who begins by assuring us that he is not going to be metaphysical usually plunges at once into a discussion of metaphysical problems with a naïveté which delights the technical philosopher. The ever increasing interest in the morphology of concepts is evidenced by Driesch in his attention to the meanings of the fundamental concepts with which he has to deal. However unsatisfactory his general conclusions may be to the majority of his readers, he has succeeded in pointing out certain problems which are worthy of attention.

ROBERT YERKES.

The Biogen Hypothesis.¹— Chiefly for the purpose of establishing a clear working hypothesis as to the inner changes of the living cell Verworn has attempted to make more precise the biogen hypothesis based on the investigations of Hermann, Pflüger, Ehrlich, Allen and others, and to show the wide application of this to the active processes of cells. Biogen molecules, according to Verworn, occur in the cytoplasm, not in the nucleus of the cell. Unlike albumen molecules, they are ordinarily very labile. The nucleus, though containing none of them, gives out material essential to their changes. The cytoplasm contains in addition to the biogen molecules reserve food materials and oxygen, the latter in weak combination. In hunger the reserve food of the cell is first used and then certain biogen molecules are sacrificed to others. To make good such loss food is appropriated and is made available to the biogen molecules through the action of the enzymes. The stimulation of protoplasm consists in changing its biogen molecules from a state of high lability to one of low lability, a change brought on by oxidation. The recovery to the state of high lability is an assimilative process that requires time, and is represented by the refractive period in many operations during which stimulation is impossible. Thus the stimulability of a mass of protoplasm is a measure of the completions of the assimilative processes which repair the effects of stimulation so far as the biogen molecules are concerned. The hypothesis thus affords a more or less complete history for protoplasmic metabolism.

¹Verworn, M. *Die Biogenhypothese*. Jena, Fischer, 1903, 8vo. vi + 114 pp.